

EXAMPLE 1 ► Identify the pattern in these function values and the kind of function that has this pattern.

x	$f(x)$
4	5
5	7
6	11
7	17
8	25

SOLUTION The values have neither the add-add, add-multiply, nor multiply-multiply property. They do exhibit the constant-second-differences property, as shown in the table. Therefore, a quadratic function fits the data.

x	$f(x)$
4	5
5	7
6	11
7	17
8	25

+1 () +2
+1 () +4
+1 () +6
+1 () +8

EXAMPLE 2 ► If function f has values $f(5) = 12$ and $f(10) = 18$, find $f(20)$ if f is

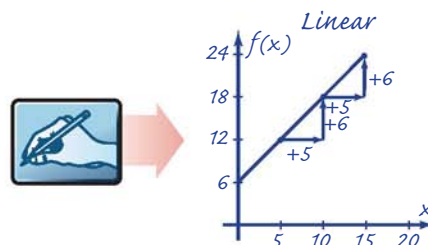
- A linear function
- A power function
- An exponential function

SOLUTION

- Linear functions have the add-add property. Notice that you add 5 to the first x -value to get the second one and that you add 6 to the first $f(x)$ -value to get the second one. Make a table of values ending at $x = 20$. The answer is $f(20) = 30$.

x	$f(x)$
5	12
10	18
15	24
20	30

+5 () +6
+5 () +6
+5 () +6



- Power functions have the multiply-multiply property. When going from the first to the second x - and $f(x)$ -values, notice that you multiply 5 by 2 to get 10 and that you multiply 12 by 1.5 to get 18. Make a table of values ending at $x = 20$. The answer is $f(20) = 27$.

x	$f(x)$
5	12
10	18
20	27

$\times 2$ () $\times 1.5$
 $\times 2$ () $\times 1.5$